

REMARKS

Claims 1-3, 12-13, 26, 27, 31-33, and 37-39 are pending.

Rejection under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 1-3, 12-13, 26-27, 31-33 and 37-39 under 35 U.S.C. § 112, second paragraph for being indefinite (See Office Action at 4-5). Claims 1, 26 and 37 are independent.

Claims 1, 26 and 37 each relate to libraries wherein each member in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb.

Each library member is associated with more than one population of semiconductor nanocrystals, each population of semiconductor nanocrystals having a distinct characteristic spectral emission. Therefore, each library member is associated with one population of semiconductor nanocrystals with a distinct characteristic spectral emission and also with at least one other population of semiconductor nanocrystals with a distinct characteristic spectral emission different from the other population. Furthermore, semiconductor nanocrystals are not part of the support but they are associated.

Applicants respectfully request reconsideration and withdrawal of this rejection.

Rejection under 35 U.S.C. § 102(e)

The Examiner continues to reject claims 1, 3, 12-13, 26-27, 32, 33, 37 and 39 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,096,496 to Frankel ("Frankel") (see Office Action at 5-6). The Examiner argues Frankel teaches "a bead (100) surrounding a substrate (190) with ID tags (120) which may be encapsulated (125) and comprises molecular anchoring sites (130a-c) with oligomeric compounds attached (165a-c) directly associated with the bead" (see Office Action at 6). Applicants respectfully disagree. Claim 1, 26 and 37 are

independent.

Claim 1 relates to a library of compounds, wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb.

Claim 26 relates to a chemical library including a plurality of member chemicals, wherein each member chemical is bound to a support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb..

Claim 37 relates to a library of polypeptides including a plurality of polypeptides, wherein each polypeptide in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission and wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb..

Frankel describes beads transmitting a distinct electromagnetic code. Firstly, the Examiner contends that "Frankel teaches ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductors" (see Office Action at 7). However, Frankel makes no mention of semiconductor nanocrystals. Accordingly, Frankel does not anticipate claims 1, 26 and 37, each of which relates to a library of compounds with more than one population of semiconductor nanocrystals.

Secondly, the Examiner contends that Frankel describes the "ID tag is fabricated on substrate 190" (see Frankel, col. 13, line 22), and that "[g]lass or plastic encapsulate 125 is formed over, or at least secured over, ID tag 120 after the fabrication of the ID tag is completed"

(see Frankel, col. 13, lines 36-38). In the device described by Frankel, the substrate is directly associated to the ID tag. In the instant claims, substrate is first associated with a support, and the support is associated with more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission (See specification, page 29, lines 1-11 and Figure 5). Frankel does not anticipate claims 1, 26 and 37 because Frankel does not describe a substrate is first associated with a support and associated with more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission.

Moreover, the Examiner contends that "Frankel teaches multiple ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductors..." and "'more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission' equates to more than one molecule of semiconductor associated with each support" (see Office Action at 7).¹ Applicants respectfully disagree. Frankel discusses use of scatter medium lasers (SML), light emitting diodes, optic resonant microcavities, spherical microcavities emitting Raman radiation, vertical cavity surface emitting semiconductor lasers (VCSEL) and distributed frequency lasers (see Frankel, col. 18, lines 10-25). Frankel makes no mention of semiconductor nanocrystals, let alone more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission. Accordingly, Frankel does not anticipate claims 1, 26 and 37, each of which relates to a library of compounds with more than one population of semiconductor nanocrystals.

Thus, Frankel does not disclose all elements of claims 1, 26 and 37. Accordingly, claims 1, 26 and 37, and the claims which depend therefrom are not anticipated by Frankel. Applicants respectfully request reconsideration and withdrawal of this rejection.

¹ The Examiner refers to MPEP § 2173.05(g) regarding functional limitations. However, the distinct characteristic spectral emission of a population of semiconductor nanocrystals is a property of the population, not a functional limitation.

Rejection under 35 U.S.C. § 103(a)

Frankel in view of Dabbousi

The Examiner has rejected claims 1-3, 12-13, 26-27, 31-33 and 37-39 under 35 U.S.C. § 103(a) as being unpatentable over Frankel in view of Dabbousi et al., 1997, (CdSe)ZnS Core-Shell Quantum Dots: Synthesis and Characterization of a Size Series of Highly Luminescent Nanocrystallites, *J. Phys. Chem. B*, 101:9463-9475 ("Dabbousi") (see Office Action at 8). Applicants respectfully disagree. Claims 1, 26 and 37 are independent.

As previously discussed, Frankel does not teach or suggest libraries wherein each member in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb, as described in claims 1, 26 and 37.

Dabbousi does not supply these omissions. Dabbousi describes the synthesis of highly luminescent CdSe(ZnS) (core/shell) composite quantum dots (see Dabbousi, Abstract). Dabbousi does not teach or suggest libraries wherein each member in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb, as described in claims 1, 26 and 37.

Additionally, applicants submit that the Examiner is relying on hindsight to reach this obviousness determination. The Federal Circuit has stated in W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 USPQ 303 (Fed. Cir. 1983) that "[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, it to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *Id.*, at 312-13. It is essential that "the decisionmaker forget what he or she has been taught at trial about the claimed

invention and cast the mind back to the time the invention was made...to occupy the mind of one skilled in the art who is presented only with references, and who is normally guided by the then-accepted wisdom in the art." *Id.*, at 313. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the reference also suggests the desirability of the combination. See MPEP 2143.01 (citing *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990)). In other words, it is legal error for the Examiner to use hindsight reconstruction to pick and choose among isolated disclosures in the cited references to deprecate the claimed invention. A person of ordinary skill in the art would not combine the identification tagging apparatus of Frankel with the semiconductor nanocrystals of Dabbousi to make the library of the instant claims.

Neither Frankel nor Dabbousi, alone or in combination, teach, suggest, or motivate a person of ordinary skill in the art to form the libraries described in the instant claims. Claims 1, 26, 37 and any claims that depend therefrom are not obvious over Frankel in view of Dabbousi.

Frankel in view of Weiss

The Examiner has rejected claims 1-3, 12-13, 26-27, 31-33 and 37-39 under 35 U.S.C. § 103(a) as being unpatentable over Frankel in view of U.S. Patent No. 6,927,069 to Weiss et al. ("Weiss"). (see Office Action at 8). Applicants respectfully disagree. Claims 1, 26 and 37 are independent.

As previously discussed, Frankel does not teach or suggest libraries wherein each member in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb, as described in claims 1, 26 and 37.

Weiss does not supply these omissions. Weiss describes a luminescent semiconductor nanocrystal compound capable of linking to an affinity molecule to form an organo luminescent semiconductor nanocrystal probe (see Weiss, col. 2, lines 22-25). Weiss does not teach or suggest libraries wherein each member in the library is bound to an individual support, each

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support having associated therewith more than one population of semiconductor nanocrystals,
each population having a distinct characteristic spectral emission, wherein each nanocrystal
comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV
semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe,
GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb, as described
in claims 1, 26 and 37.

Neither Frankel nor Weiss, alone or in combination, teach, suggest, or motivate a person
of ordinary skill in the art to form the libraries described in the instant claims. Claims 1, 26, 37
and any claims that depend therefrom are not obvious over Frankel in view of Weiss.

CONCLUSION

In light of the foregoing amendments and remarks, Applicants respectfully submit that all
requirements for patentability are met and ask that all claims be allowed. Please apply any
charges or credits to deposit account 19-4293.

Respectfully submitted,

Date: 10-15-09



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